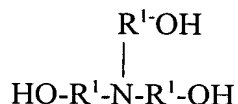


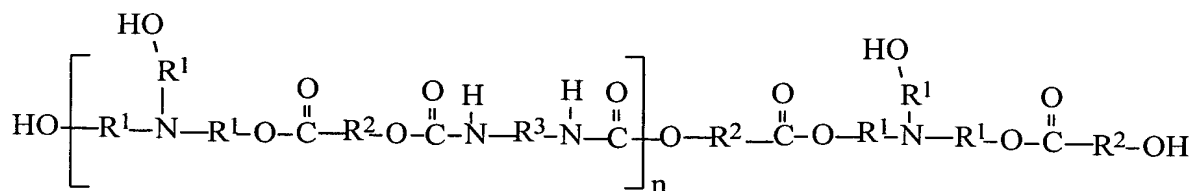
WHAT IS CLAIMED:

1. A composition produced by the method of:
 - a. producing a trialkanolamine fatty acid ester comprising reacting a trialkanolamine according to the general structure:



where R¹ is a C₂ to C₁₂ saturated or unsaturated, linear, branch-chained, cyclic or aromatic hydrocarbon group which is either unsubstituted or substituted with a pendant hydroxyl group, with a C₂ to C₂₅ acid having at least one free hydroxyl group or a triglyceride comprising C₁₀ to C₂₅ fatty acids having at least one free hydroxyl group under conditions effective to produce a trialkanolamine mono-, di- or trifatty acid ester and then reacting said trialkanolamine fatty acid ester with a C₄ to C₂₄ diisocyanate to produce a polyurethane trialkanolamine fatty acid ester.

2. The composition according to claim 1 having the chemical formula I:

**Formula I**

wherein R¹ is a C₂ to C₁₂ saturated or unsaturated, linear, branch-chained, cyclic or aromatic hydrocarbon group which is either unsubstituted or substituted with a pendant hydroxyl group, but is preferably unsubstituted;

R² is a C₁ to C₂₄ saturated or unsaturated, linear, branch-chained, cyclic or aromatic hydrocarbon

group wherein said hydrocarbon group may be a phenyl or benzyl group or substituted phenyl or benzyl group, an alkylphenyl, alkylbenzyl or a substituted alkylphenyl or alkylbenzyl group;

R³ is a C₂ through C₂₂ linear, cyclic or branch-chained saturated or unsaturated hydrocarbon group which is substituted or unsubstituted, an aromatic group, including a phenyl or benzyl group or substituted phenyl or benzyl group, an alkylphenyl, alkylbenzyl or substituted alkylphenyl or alkylbenzyl group; and

n is an integer from 2 to

3. The composition according to claim 1 wherein said trialkanolamine is triethanolamine

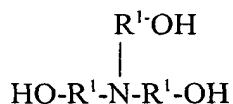
4. The composition according to claim 1 wherein said fatty acid is selected from the group consisting of caproic, caprylic, capric, lauric, myristic, palmitic, stearic, arachadonic acid, linoleic, oleic, linoleic, linolenic, 2-ethylhexoic, isooctanoic, pelargonic, heptanoic, undecanoic, isoluric, isomyristic, isopalmitic, isostearic, coconut fatty acids, palm kernal fatty acids, soybean fatty acids, safflower fatty acids, castor oil fatty acids, lactic acid, glycolic acid, glycolic acid, alpha hydroxy butyric acid, alpha hydroxy pentanoic acid, alpha hydroxy hexanoic acid, alpha hydroxy heptanoic acid, alpha hydroxy octanoic acid, alpha hydroxy nonanoic acid, alpha hydroxy decanoic acid, alpha hydroxy dodecanoic acid, salicylic acid, ricinoleic acid, 12-hydroxystearic acid, erucic acid, oleic acid, behenic acid and mixtures, thereof.

5. The composition according to claim 1 wherein said fatty acid is selected from the group consisting of ricinoleic acid, oleic acid, erucic acid lactic acid, salicylic acid and mixtures, thereof.

6. The composition according to claim 1 which is further quaternized with a quaternizing agent.

7. The composition according to claim 1 wherein said diisocyanate is selected from the group consisting of isophoronediiisocyanate, m-phenylene-diisocyanate, p-phenylenediisocyanate, 4,4-butyl-m-phenylene-diisocyanate, 4-methoxy-m-phenylenediisocyanate, 4-phenoxy-m-phenylenediisocyanate, 4-chloro-m-phenyldiisocyanate, toluenediisocyanate, m-xylylenediisocyanate, p-xylylenediisocyanate, 1,4-napthalenediisocyanate, cumene-1,4-diisocyanate, durene-diisocyanate, 1,5-napthylenediisocyanate, 1,8-napthylenediisocyanate, 1,5-tetrahydronapthylenediisocyanate, 2,6-napthylenediisocyanate, 1,5-tetrahydronapthylenediisocyanate; p,p-diphylenediisocyanate; 2,4-diphenylhexane-1,6-diisocyanate; methylenediisocyanate; ethylenediisocyanate; trimethylenediisocyanate,

Variable	Group 1		Group 2		Group 3		Group 4		Group 5		Group 6		Group 7		Group 8		Group 9		Group 10			
	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD		
Age	25.5	2.5	26.0	2.8	25.8	2.6	26.2	2.7	25.9	2.5	26.1	2.9	25.7	2.4	26.3	2.6	25.6	2.7	26.4	2.8	25.5	2.5
Height	175.2	5.1	176.5	5.3	174.8	5.0	177.1	5.2	175.9	5.1	176.8	5.4	174.9	5.0	177.0	5.2	175.7	5.1	176.9	5.3	175.3	5.1
Weight	72.5	10.2	73.8	10.5	71.9	10.1	74.2	10.3	72.7	10.2	73.9	10.6	72.1	10.1	74.1	10.3	72.4	10.2	74.0	10.5	72.6	10.2
Heart rate	72.5	8.5	73.2	8.8	71.8	8.4	73.5	8.6	72.9	8.5	73.1	8.9	71.9	8.4	73.4	8.6	72.7	8.5	73.0	8.8	72.8	8.5
Stroke volume	100.5	15.2	101.2	15.5	99.8	15.1	101.5	15.3	100.9	15.2	101.1	15.6	99.9	15.1	101.4	15.3	100.7	15.2	101.3	15.5	100.8	15.2
Cardiac output	7.2	1.2	7.3	1.3	7.1	1.1	7.4	1.2	7.2	1.2	7.3	1.4	7.1	1.1	7.4	1.2	7.2	1.2	7.3	1.3	7.2	1.2
Systemic pressure	120.5	10.5	121.2	10.8	119.8	10.4	121.5	10.6	120.9	10.5	121.1	10.9	119.9	10.4	121.4	10.6	120.7	10.5	121.3	10.8	120.8	10.5
Pulmonary pressure	25.5	3.5	26.0	3.8	25.8	3.4	26.2	3.6	25.9	3.5	26.1	3.9	25.7	3.4	26.3	3.6	25.6	3.5	26.4	3.8	25.5	3.5
Left ventricular pressure	120.5	10.5	121.2	10.8	119.8	10.4	121.5	10.6	120.9	10.5	121.1	10.9	119.9	10.4	121.4	10.6	120.7	10.5	121.3	10.8	120.8	10.5
Right ventricular pressure	25.5	3.5	26.0	3.8	25.8	3.4	26.2	3.6	25.9	3.5	26.1	3.9	25.7	3.4	26.3	3.6	25.6	3.5	26.4	3.8	25.5	3.5
Mean arterial pressure	93.5	8.5	94.2	8.8	92.8	8.4	94.5	8.6	93.9	8.5	94.1	8.9	92.9	8.4	94.4	8.6	93.7	8.5	94.0	8.8	93.8	8.5
Central venous pressure	10.5	2.5	10.8	2.8	10.2	2.4	11.0	2.6	10.7	2.5	10.9	2.9	10.3	2.4	11.1	2.6	10.6	2.5	11.0	2.8	10.7	2.5
Left atrial pressure	10.5	2.5	10.8	2.8	10.2	2.4	11.0	2.6	10.7	2.5	10.9	2.9	10.3	2.4	11.1	2.6	10.6	2.5	11.0	2.8	10.7	2.5
Right atrial pressure	10.5	2.5	10.8	2.8	10.2	2.4	11.0	2.6	10.7	2.5	10.9	2.9	10.3	2.4	11.1	2.6	10.6	2.5	11.0	2.8	10.7	2.5
Left ventricular end-diastolic pressure	120.5	10.5	121.2	10.8	119.8	10.4	121.5	10.6	120.9	10.5	121.1	10.9	119.9	10.4	121.4	10.6	120.7	10.5	121.3	10.8	120.8	10.5
Right ventricular end-diastolic pressure	25.5	3.5	26.0	3.8	25.8	3.4	26.2	3.6	25.9	3.5	26.1	3.9	25.7	3.4	26.3	3.6	25.6	3.5	26.4	3.8	25.5	3.5
Left ventricular stroke volume	100.5	15.2	101.2	15.5	99.8	15.1	101.5	15														



with a C₂ to C₂₅ acid having at least one free hydroxyl group or a triglyceride comprising C₁₀ to C₂₅ fatty acids having at least one free hydroxyl group under conditions effective to produce a

trialkanolamine mono-, di- or trifatty acid ester;

b. reacting said trialkanolamine fatty acid ester according to step a with a C_4 to C_{24} diisocyanate under conditions effective to cause polymerization of said ester with said diisocyanate to produce a polyurethane trialkanolamine fatty acid ester; and

c. reacting said polyurethane trialkanolamine fatty acid ester according to step b with a quaternizing agent to produce a polyurethane trialkanolamine fatty acid ester quat.

15. The composition according to claim 14 wherein said trialkanolamine is triethanolamine

16. The composition according to claim 14 wherein said fatty acid is selected from the group consisting of caproic, caprylic, capric, lauric, myristic, palmitic, stearic, aracidonic acid, linoleic, oleic, linoleic, linolenic, 2-ethylhexoic, isooctanoic, pelargonic, heptanoic, undecanoic, isoluric, isomyristic, isopalmitic, isostearic, coconut fatty acids, palm kernal fatty acids, soybean fatty acids, safflower fatty acids, castor oil fatty acids, lactic acid, glycolic acid, glycolic acid, alpha hydroxy butyric acid, alpha hydroxy pentanoic acid, alpha hydroxy hexanoic acid, alpha hydroxy heptanoic acid, alpha hydroxy octanoic acid, alpha hydroxy nonanoic acid, alpha hydroxy decanoic acid, alpha hydroxy dodecanoic acid, salicylic acid, ricinoleic acid, 12-hydroxystearic acid, erucic acid, oleic acid, behenic acid and mixtures, thereof.

17. The composition according to claim 14 wherein said fatty acid is selected from the group consisting of ricinoleic acid, oleic acid, erucic acid lactic acid, salicylic acid and mixtures, thereof.

18. The composition according to claim 14 wherein said diisocyanate is selected from the group consisting of isophoronediiisocyanate, m-phenylene-diisocyanate, p-phenylenediisocyanate, 4,4-butyl-m-phenylene-diisocyanate, 4-methoxy-m-phenylenediisocyanate, 4-phenoxy-m-phenylenediisocyanate, 4-chloro-m-phenyldiisocyanate, toluenediisocyanate, m-xylylenediisocyanate, p-xylylenediisocyanate, 1,4-naphthalenediisocyanate, cumene-1,4-diisocyanate, durene-diisocyanate, 1,5-naphthylenediisocyanate, 1,8-naphthylenediisocyanate, 1,5-tetrahydronaphthylenediisocyanate, 2,6-naphthylenediisocyanate, 1,5-tetrahydronaphthylenediisocyanate; p,p-diphenylenediisocyanate; 2,4-diphenylhexane-1,6-diisocyanate; methylenediisocyanate; ethylenediisocyanate; trimethylenediisocyanate, tetramethylenediisocyanate, pentamethylenediisocyanate,

hexamethylenediisocyanate, nonamethylenediisocyanate, decamethylene-diisocyanate, 3-chloro-trimethylenediisocyanate and 2,3-dimethyltetramethylenediisocyanate and mixtures thereof.

19. The composition according to claim 14 wherein said diisocyanate is isophorone diisocyanate.

20. The composition according to claim 15 wherein said diisocyanate is isophorone diisocyanate.

21. The composition according to claim 16 wherein said diisocyanate is isophorone diisocyanate.

22. The composition according to claim 17 wherein said diisocyanate is isophorone diisocyanate.

23. The composition according to claim 14 wherein said quaternizing agent is selected from the group consisting of dimethyl sulfate, diethyl sulfate, methyl bromide, benzyl chloride, ethyl benzyl chloride, methyl benzyl chloride, dichloroethyl ether, epichlorohydrin, ethylene chlorohydrin, methyl chloride, pyridinium chloride and allyl chloride.

24. The composition according to claim 15 wherein said quaternizing agent is selected from the group consisting of dimethyl sulfate, diethyl sulfate, methyl bromide, benzyl chloride, ethyl benzyl chloride, methyl benzyl chloride, dichloroethyl ether, epichlorohydrin, ethylene chlorohydrin, methyl chloride, pyridinium chloride and allyl chloride.

25. The composition according to claim 16 wherein said quaternizing agent is selected from the group consisting of dimethyl sulfate, diethyl sulfate, methyl bromide, benzyl chloride, ethyl benzyl chloride, methyl benzyl chloride, dichloroethyl ether, epichlorohydrin, ethylene chlorohydrin, methyl chloride, pyridinium chloride and allyl chloride.

26. The composition according to claim 17 wherein said quaternizing agent is selected from the group consisting of dimethyl sulfate, diethyl sulfate, methyl bromide, benzyl chloride,

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ethyl benzyl chloride, methyl benzyl chloride, dichloroethyl ether, epichlorohydrin, ethylene chlorohydrin, methyl chloride, pyridinium chloride and allyl chloride.

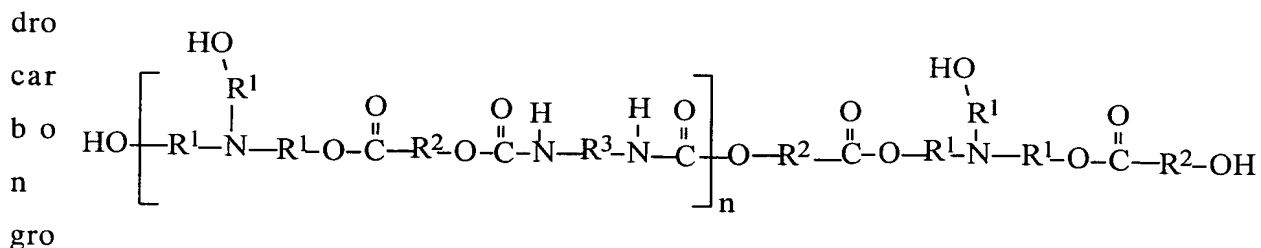
27. The composition according to claim 18 wherein said quaternizing agent is selected from the group consisting of dimethyl sulfate, diethyl sulfate, methyl bromide, benzyl chloride, ethyl benzyl chloride, methyl benzyl chloride, dichloroethyl ether, epichlorohydrin, ethylene chlorohydrin, methyl chloride, pyridinium chloride and allyl chloride.

28. The composition according to claim 14 wherein said triglyceride is selected from the group consisting of castor oil, coconut oil, palm kernel oil, soybean oil, safflower oil and rape seed oil.

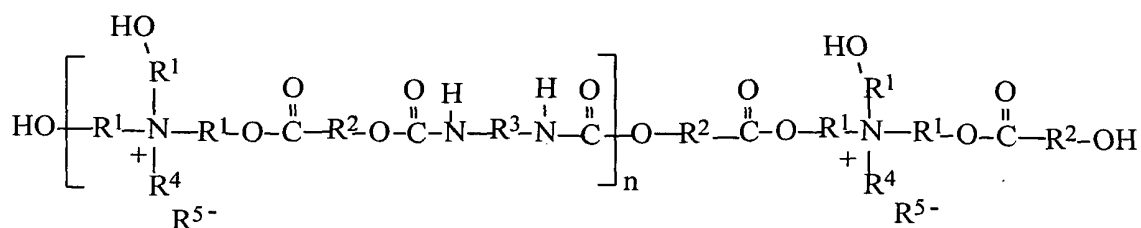
29. A composition having the chemical formula I:

Formula I

wherein R^1 is a C_2 to C_{12} saturated or unsaturated, linear, branch-chained, cyclic or aromatic hydrocarbon group which is either unsubstituted or substituted with a pendant hydroxyl group; R^2 is a C_1 to C_4 saturated or unsaturated, linear, branch-chained, cyclic or aromatic hydrocarbon group which is either unsubstituted or substituted with a pendant hydroxyl group;



up wherein said hydrocarbon group may be a phenyl or benzyl group or substituted phenyl or benzyl group, an alkylphenyl, alkylbenzyl or a substituted alkylphenyl or alkylbenzyl group; R^3 is a C_2 through C_{22} linear, cyclic or branch-chained saturated or unsaturated hydrocarbon



group which is substituted or unsubstituted, an aromatic group, including a phenyl or benzyl group or substituted phenyl or benzyl group, an alkylphenyl, alkylbenzyl or substituted alkylphenyl or alkylbenzyl group; and

n is an integer from 2 to 5,000.

30. The composition according to claim 29 wherein R¹ is an unsubstituted hydrocarbon group.

31. The composition according to claim 29 wherein R² is a C₉ to C₂₄ hydrocarbon group.

32. The composition according to claim 29 wherein R³ is a C₆ to C₁₂ hydrocarbon group.

33. The composition according to claim 30 wherein R³ is an isophorone group.

34. The composition according to claim 30 wherein R^3 is an isophorone group.

35. The composition according to claim 31 wherein R³ is an isophorone group.

36. The composition according to claim 32 wherein R³ is an isophorone group.

37. A composition having the chemical formula II:

Formula II

wherein R¹ is a C₂ to C₁₂ saturated or unsaturated, linear, branch-chained, cyclic or aromatic

hydrocarbon group which is either unsubstituted or substituted with a pendant hydroxyl group, but is preferably unsubstituted;

R^2 is a C_1 to C_{24} saturated or unsaturated, linear, branch-chained, cyclic or aromatic hydrocarbon

group wherein said hydrocarbon group may be a phenyl or benzyl group or substituted phenyl or benzyl group, an alkylphenyl, alkylbenzyl or a substituted alkylphenyl or alkylbenzyl group;

R^3 is a C_2 through C_{22} (preferably, C_6 through C_{12}) linear, cyclic or branch-chained saturated or unsaturated hydrocarbon group which is substituted or unsubstituted, an aromatic group, including a phenyl or benzyl group or substituted phenyl or benzyl group, an alkylphenyl, alkylbenzyl or substituted alkylphenyl or alkylbenzyl group;

R^4 is a quaternizing group;

R^5 is a counterion to the quaternizing group; and

n is an integer from about 2 to 5,000, preferably about 2 to 1000, more preferably about 10 to 500.

38. The composition according to claim 37 wherein R^4 is selected from the group consisting of methyl, ethyl, propyl, benzyl, phenyl, alkyl benzyl, ethyl, propyl, benzyl, phenyl, alkyl benzyl, allyl methyl and allyl.

39. The composition according to claim 37 wherein R^5 is selected from the group consisting of anionic chloride, bromide, iodide, fluoride, carboxylate, mono- or dianionic sulfate and mono-, di- and tri-anionic phosphate.

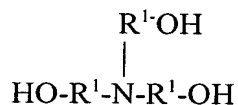
40. The composition according to claim 38 wherein R^5 is selected from the group consisting of anionic chloride, methyl sulfate and ethyl sulfate.

41. The composition according to claim 37 wherein R^1 is an unsubstituted hydrocarbon group.

42. The composition according to claim 37 wherein R^2 is a C_9 to C_{24} hydrocarbon group.

43. The composition according to claim 37 wherein R^3 is a C_6 to C_{12} hydrocarbon group.

44. The composition according to claim 37 wherein R³ is an isophorone group.
45. The composition according to claim 38 wherein R³ is an isophorone group.
46. The composition according to claim 39 wherein R³ is an isophorone group.
47. The composition according to claim 40 wherein R³ is an isophorone group.
48. A method of making a polyurethane composition for use in personal products comprising:
- a. reacting a trialkanolamine according to the general structure:



wherein R¹ is a C₂ to C₁₂ saturated or unsaturated, linear, branch-chained, cyclic or aromatic hydrocarbon group, with a C₂ to C₂₅ acid having at least one free hydroxyl group or a triglyceride comprising C₁₀ to C₂₅ fatty acids having at least one free hydroxyl group under conditions effective to produce a trialkanolamine mono-, di- or trifatty acid ester;

- b. reacting said trialkanolamine fatty acid ester according to step a with a C₄ to C₂₄ diisocyanate under conditions effective to cause polymerization of said ester with said diisocyanate to produce a polyurethane trialkanolamine fatty acid ester; and
- c. reacting said polyurethane trialkanolamine fatty acid ester according to step b with a quaternizing agent to produce a polyurethane trialkanolamine fatty acid ester quat.

49. A personal care product to be used in contact with the skin, hair or nails said personal care product comprising a mixture of effective amounts of components selected from the group consisting of water, solvents, emollients, humectants, emulsifiers, surfactants, thickeners, coloring agents, preservatives and fragrances, said composition further comprising an effective amount of at least one compound according to claim 1.

50. A personal care product to be used in contact with the skin, hair or nails said personal care product comprising a mixture of effective amounts of components selected from the group

consisting of water, solvents, emollients, humectants, emulsifiers, surfactants, thickeners, coloring agents, preservatives and fragrances, said composition further comprising an effective amount of at least one compound according to claim 3.

51. A personal care product to be used in contact with the skin, hair or nails said personal care product comprising a mixture of effective amounts of components selected from the group consisting of water, solvents, emollients, humectants, emulsifiers, surfactants, thickeners, coloring agents, preservatives and fragrances, said composition further comprising an effective amount of at least one compound according to claim 14.

52. A personal care product to be used in contact with the skin, hair or nails said personal care product comprising a mixture of effective amounts of components selected from the group consisting of water, solvents, emollients, humectants, emulsifiers, surfactants, thickeners, coloring agents, preservatives and fragrances, said composition further comprising an effective amount of at least one compound according to claim 15.

53. A personal care product to be used in contact with the skin, hair or nails said personal care product comprising a mixture of effective amounts of components selected from the group consisting of water, solvents, emollients, humectants, emulsifiers, surfactants, thickeners, coloring agents, preservatives and fragrances, said composition further comprising an effective amount of at least one compound according to claim 16.

54. A personal care product to be used in contact with the skin, hair or nails said personal care product comprising a mixture of effective amounts of components selected from the group consisting of water, solvents, emollients, humectants, emulsifiers, surfactants, thickeners, coloring agents, preservatives and fragrances, said composition further comprising an effective amount of at least one compound according to claim 17.

55. A personal care product to be used in contact with the skin, hair or nails said personal care product comprising a mixture of effective amounts of components selected from the group consisting of water, solvents, emollients, humectants, emulsifiers, surfactants, thickeners, coloring agents, preservatives and fragrances, said composition further comprising an effective amount of at least one compound according to claim 18.

56. A personal care product to be used in contact with the skin, hair or nails said personal care product comprising a mixture of effective amounts of components selected from the group consisting of water, solvents, emollients, humectants, emulsifiers, surfactants, thickeners, coloring agents, preservatives and fragrances, said composition further comprising an effective amount of at least one compound according to claim 19.

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